is useful to force a reset only after the patient's status is predicted to stabilize, such as after ingestion of medication by the patient, for example. The command to reset the algorithm can be received using the activation describe, for example, in commonly assigned U.S. Pat. No. 5,836,975 to DeGroot et al., incorporated herein by reference in its entirety.

FIG. **14** is a flowchart of a method illustrating a method for determining changes in impedance according to an embodiment of the present invention. The method for determining changes in impedance illustrated in FIG. **14** is similar to the method described above in reference to FIG. **9**, however, during initialization of Step **600** in the embodiment of FIG. **14**, the baseline impedance is set equal to a predetermined value, Step **608**, input by the physician during implant of the device. The baseline impedance then maintains this predetermined value throughout the process of determining changes in impedance, rather than being updated automatically in response to the calculated period average impedance. As a result, the step of updating the baseline impedance, Step **516**, in the embodiment of FIG. **9** is not included in the embodiment of FIG. **14**.

FIG. **15** is an exemplary schematic diagram illustrating obtaining initial short term average impedance values, according to an embodiment of the present invention. As illustrated in FIG. **15**, since the baseline impedance maintains the predetermined value obtained during initialization, Step **600**, the embodiment of FIG. **14** differs from the embodiment of FIG. **9** in that once the parameters are initialized, Step **600**, an initial value is determined only for the short term average impedance, Step **606**, and not for the baseline impedance.

In addition, in the embodiment of FIG. **14**, the determination of whether a significant change in impedance has occurred is made in Step **630** by determining whether the updated integral of the difference between the period average impedance and the baseline impedance (IntDiff) **412** is less than predetermined IntDiff threshold **416**. According to another embodiment of the present invention, the determination in Step **630** as to whether a significant change in impedance has occurred can be made by determining whether the difference between the short term average impedance and the baseline impedance STA-BL is less than a predetermined threshold **418**, and in yet another embodiment by determining whether any combination of IntDiff **412** and STA-BL is less than the respective thresholds **416** and **418**. The remainder of the steps involved in the embodiment of FIG. **14** are similar to the corresponding steps described above in reference to the embodiment of FIG. **9**, and therefore are not repeated merely for the sake of brevity.

By maintaining the selected predetermined value for the baseline impedance through the process, the embodiment of FIG. **14** enables a clinician who is familiar with the specific physiologic tendencies of a patient and who desires to have the ability to set the baseline impedance for that patient at a specific predetermined value, say 75 Ohms, for example, so that the baseline impedance maintains that predetermined value throughout the process of determining change in impedance according to the present invention.

Measurement of intrathoracic impedance according to the present invention can be utilized, as described above, for detecting onset of pulmonary congestion/edema, as well for detection of dehydration of the patient (signaled by an increase in the impedance) or the presence of worsening of other disease processes like pulmonary fibrosis, asthma, or COPD.

Some of the techniques described above may be embodied as a computer-readable medium comprising instructions for a programmable processor such as microprocessor **224** or pacer timing/control circuitry **212** shown in FIG. **7**. The programmable processor may include one or more individual processors, which may act independently or in concert. A "computer-readable medium" includes but is not limited to any type of computer memory such as floppy disks, conventional hard disks, CR-ROMS, Flash ROMS, nonvolatile ROMS, RAM and a magnetic or optical storage medium. The medium may include instructions for causing a processor to perform any of the features described above for initiating a session of the escape rate variation according to the present invention.

While a particular embodiment of the present invention has been shown and described, modifications may be made. It is therefore intended in the appended claims to cover all such changes and modifications, which fall within the true spirit and scope of the invention.

The invention claimed is:

1. A method of detecting impedance changes of a cardiac signal in a medical device, comprising:

sensing a plurality of impedances in response to the cardiac signal;

determining short term average impedances in response to a predetermined number of sensed impedances of the plurality of sensed impedances sensed per day;

determining a baseline impedance in response to a plurality of the determined short term average impedances;

determining a relative position of the determined short term average impedance and the determined baseline impedance;

and

determining whether there is a predetermined change in impedance in response to the determined relative position.

2. The method of claim **1**, wherein the predetermined change in impedance corresponds to the determined short term average impedance being greater than the determined baseline impedance subsequent to being less than the determined baseline impedance.

3. The method of claim **2**, further comprising generating an alarm in response to determining there is a predetermined change in impedance.

4. The method of claim **2**, further comprising modifying a parameter of the medical device in response to determining there is a predetermined change in impedance.

5. The method of claim **1**, further comprising generating an alarm in response to determining there is a predetermined change in impedance.

6. The method of claim **1**, further comprising modifying a parameter of the medical device in response to determining there is a predetermined change in impedance.

7. A medical device for detecting impedance changes of a cardiac signal of a patient's heart, comprising:

a plurality of electrodes sensing the cardiac signal; and

a processor configured to sense a plurality of impedances in response to the cardiac signal, determine short term average impedances in response to a predetermined number of sensed impedances of the plurality of sensed impedances sensed per day, determine a baseline impedance in response to a plurality of the determined short term average impedances, determine a relative position of the determined short term average impedance and the determined baseline impedance, and determine whether there is a predetermined change in impedance in response to the determined relative position.

8. The medical device of claim **7**, wherein the predetermined change in impedance corresponds to the determined short term average impedance being greater than the deter-